

PRIMARY VOLATILES DURING THE 2010 APPARITION OF COMET 103P/HARTLEY-2 AS REVEALED AT INFRARED WAVELENGTHS: PRODUCTION RATES AND SPATIAL PROFILES. M. J. Mumma¹, M. A. DiSanti¹, B. P. Bonev^{1,2}, L. Paganini^{1,3}, G. L. Villanueva^{1,2}, E. L. Gibb⁴, J. Keane⁵, G. A. Blake⁵, R. S. Ellis⁵, K. Magee-Sauer⁶, M. Combi⁷, H. Boehnhardt⁸, M. Lippi⁸, and K. Meech⁵. ¹Goddard Center for Astrobiology, NASA GSFC, MS 690.3, Greenbelt, MD 20771 (michael.j.mumma@nasa.gov), ²Dept. of Physics, Catholic U. of America, Washington, DC 20064, ³NASA Postdoctoral Fellow, NASA GSFC, MS 690.3, Greenbelt, MD 20771, ⁴Univ. of Missouri – St. Louis, St. Louis, MO 63121, ⁵Institute for Astronomy, Univ. of Hawaii, Honolulu, HI 96822, ⁵California Institute of Technology, Pasadena, CA 91125, ⁶Rowan University, Glassboro, NJ 08028 – 1701, ⁷University of Michigan, Ann Arbor, MI48109-2143, ⁸ Max Planck Institute for Solar System Research, DE 37191 Katlenburg-Lindau, Germany.

We acquired high resolution near-infrared spectra of comet 103P/Hartley-2 with NIRSPEC at the W. M. Keck Observatory and CRIRES at the ESO VLT, emphasizing primary volatiles before, during, and after the comet's close approach to Earth (July-December 2010; $R_h = 1.62 \rightarrow 1.26$ AU). We will present the mixing ratios for trace volatiles (C_2H_6 , HCN, CH_3OH , etc.), their rotational temperatures, and their spatial distributions in the coma both along the polar jet (UT 19.5 October) and nearly orthogonal to the jet (UT 22.5 October).

Keck telescope time was granted by the University of Hawaii, California Institute of Technology, and NOAO (through the Telescope System Instrumentation Program funded by NSF). VLT time was granted by the European Southern Observatory. We gratefully acknowledge support by NSF Astronomy and Astrophysics Research Grants Program (PI/co-PI Bonev/Gibb), by NASA's Planetary Astronomy (PI Mumma; PI DiSanti), Planetary Atmospheres (PI DiSanti; PI Villanueva), and Astrobiology (PI Mumma; PI Meech) Programs.